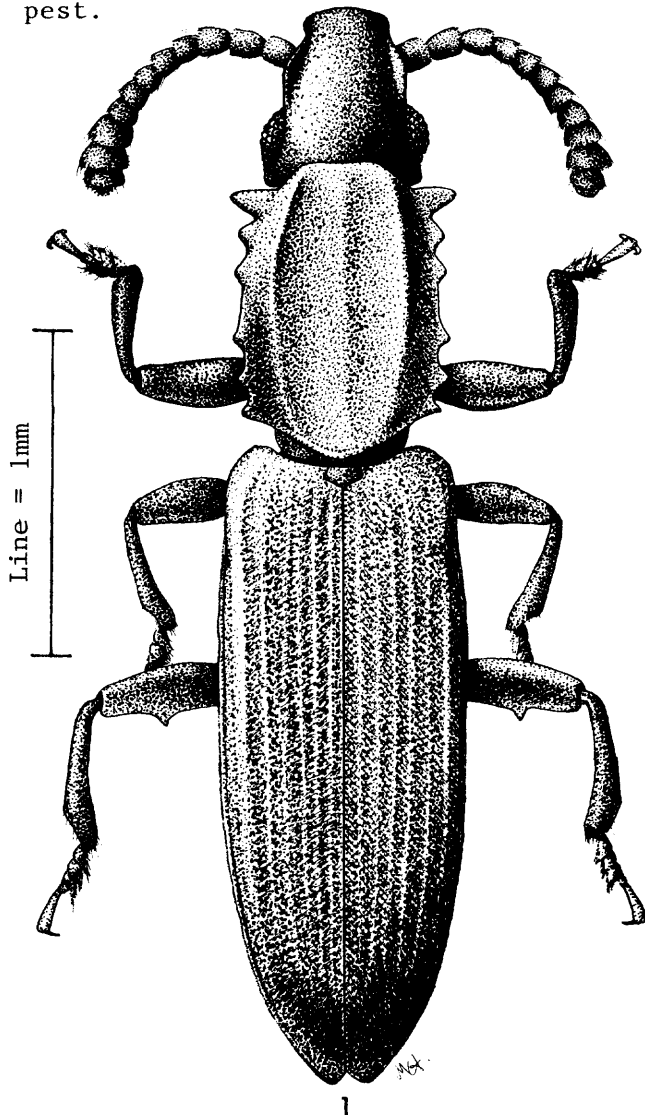


FIRST RECORDS OF A STORED PRODUCTS PEST,  
ORYZAEPHILUS ACUMINATUS HALSTEAD, FROM THE WESTERN HEMISPHERE

(COLEOPTERA: SILVANIDAE)<sup>1</sup>

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**INTRODUCTION:** A commercial nursery in Fort Myers, Florida imported seeds of the neem tree (Azadirachta indica A. Juas) from India to be used for their purported insecticidal properties. Beetles were discovered in the storage area on 11 January, 1983 and were sent to the Florida Department of Agriculture for identification. They were identified by the senior author as Oryzaephilus acuminatus Halstead, constituting the first U.S. record. Recommendations were immediately made to fumigate the area where the seed was stored in order to prevent establishment of the pest.



A previous shipment of 1,000 kilos of the seed was made a year earlier, but no beetles were noted then. The present shipment, consisting of 3,000 kilos, left India in September 1982, arriving in Los Angeles (San Pedro) on 12 December, 1982. It was then shipped to Miami and stored for about 3 weeks before being shipped to Fort Myers. There it was stored in a room with part of the previous shipment. Thousands of beetles (all stages) were found in the storage area. This area was fumigated with 98% methyl bromide and 2% chloropicrin, (at the USDA recommended rate), the surrounding nursery was treated with Dursban (2EC), 2 pints/100 gal. water, and greenhouse areas were sprayed with Lanate (20 oz./100 gal. water). All subsequent inspections have been negative (after 9 months), and no infestation is known.

**DESCRIPTION:** (Fig. 1) O. acuminatus is similar to the other 2 stored products species of Oryzaephilus found in the U.S. Adults are dark brown to black with recumbent golden setae. Males range in length from 3.4-3.7mm; females from 3.3-3.5mm. Body elongate, parallel sided, ratio of length to width 4.3-4.4:1 in males, 3.9-4.1:1 in females. Pronotum in large males elongate, 1.5-

Fig. 1. Oryzaephilus acuminatus Halstead, male.

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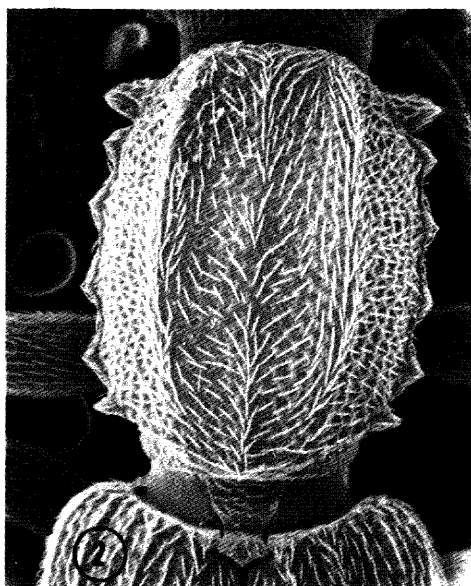


Fig. 2. *Oryzaephilus mercator* (Fauvel), pronotum, male. Note lesser development of anterior pronotal angles compared to fig.1.

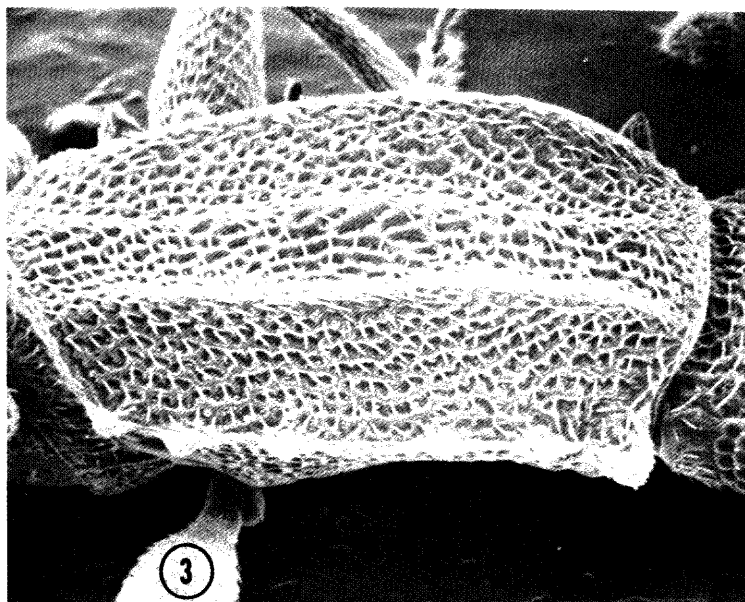
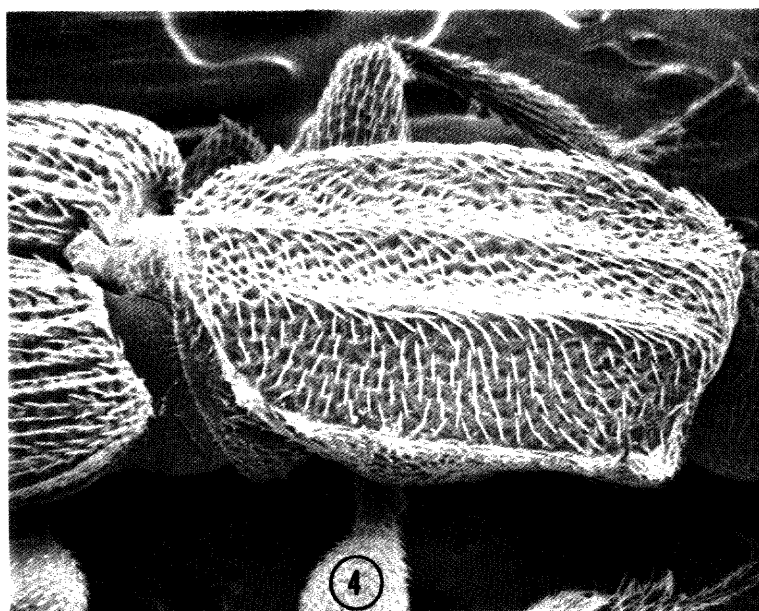


Fig. 3. *Oryzaephilus acuminatus* Halstead, pronotum, male. Oblique view.

Fig. 4. *Oryzaephilus mercator* (Fauvel), pronotum, male. Oblique view.



1.7:1; lateral ridges and anterior pronotal angles strongly developed (fig. 1, 3) (all above ratios are from Halstead, 1980). The immature stages have not been described, but larvae resemble those of the saw-toothed grain beetle [*O. surinamensis* (L.)] illustrated by Peterson (1979: fig. C49-A). In Cutler's (1971) key to the larvae of some economically important silvanids, *O. acuminatus* would key to *O. mercator*, the merchant grain beetle, sharing with that species the possession of 4 long, antero-lateral setae on abdominal tergites 2-7.

**BIOLOGY:** In the original description, Halstead (1980) reported on crossing experiments among *O. acuminatus*, *O. mercator*, and *O. surinamensis*; *O. acuminatus* and *O. mercator* resulted in a few sterile hybrids; *O. acuminatus* and *O. surinamensis* were entirely unsuccessful. He noted in *O. acuminatus* that: "Its performance in cultures at constant temperatures suggests considerable pest potential." Some paratypes were designated from a culture of specimens collected in England in coconut shells imported from India.

After studying *O. acuminatus* at a variety of temperatures, humidities, and culture media, Jacob (1981) concluded that "... there are good reasons for concluding that *O. acuminatus* will not succeed as a storage pest as well as the other

two species. *O. acuminatus* lays fewer eggs and this alone would probably lead to its failure in competition with them. Although it develops on cereals as quickly as *O. mercator*, its low rate of oviposition and considerable mortality of developing larvae and pupae ensure that its potential for increase is less."

**HOSTS:** The neem tree (*Azadirachta indica* A. Juas) is primarily Indian in distribution. At least one tree is growing at the USDA Plant Introduction Station in south Miami. The beetle appears to thrive in dry stored materials; in this case seeds. Although these seeds are reported to have insecticidal properties, the chemical does not appear to be toxic to *O. acuminatus*.

Although some host preferences may exist, it is likely that any stored plant materials could provide sustenance. The British interceptions were in coconut shells, and it was cultured on groundnuts, on copra, and on a mixture of rolled oats, wheatfeed, and yeast in the laboratory. The saw-toothed grain beetle is found in flour, grains, seeds, and many kinds of stored products.

**DISTRIBUTION:** Halstead (1980) recorded it from India, Sri Lanka, and England (imported on coconut shells). The discovery of this species in Fort Myers represents the first record of its occurrence outside the Old World (Halstead, personal communication).

**TAXONOMY:** Although *O. acuminatus* is superficially similar to both the saw-toothed grain beetle (*O. surinamensis*) and the merchant grain beetle (*O. mercator*) there are numerous structural differences distinguishing adults of the 3 species. Both *O. mercator* and *O. acuminatus* have relatively large eyes and short temples, (fig. 5), while *O. surinamensis* has small eyes and long temples (fig. 6). Identification of *O. acuminatus* was confirmed by comparison with a paratype in the Florida State Collection of Arthropods. The following key, modified from Halstead (1980), should permit the identification of both sexes of these 3 species.

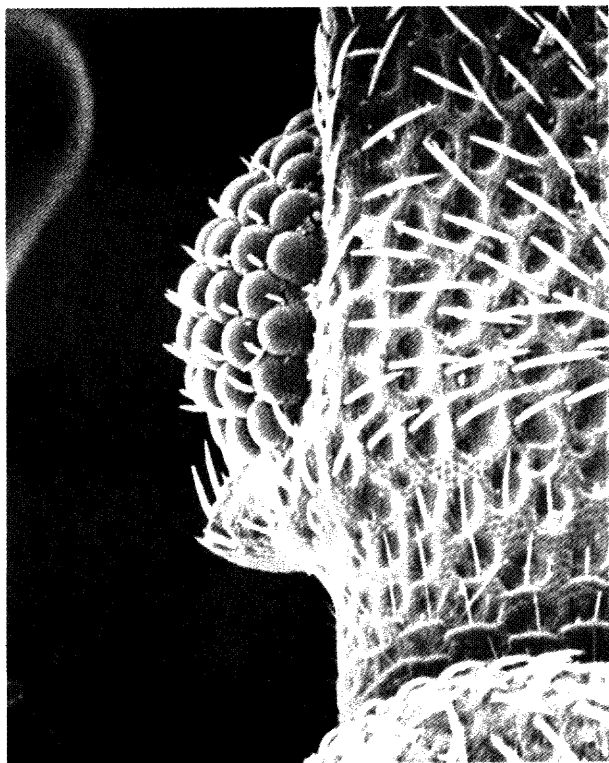


Fig. 5. *Oryzaephilus mercator* Fauvel, left eye and temple.

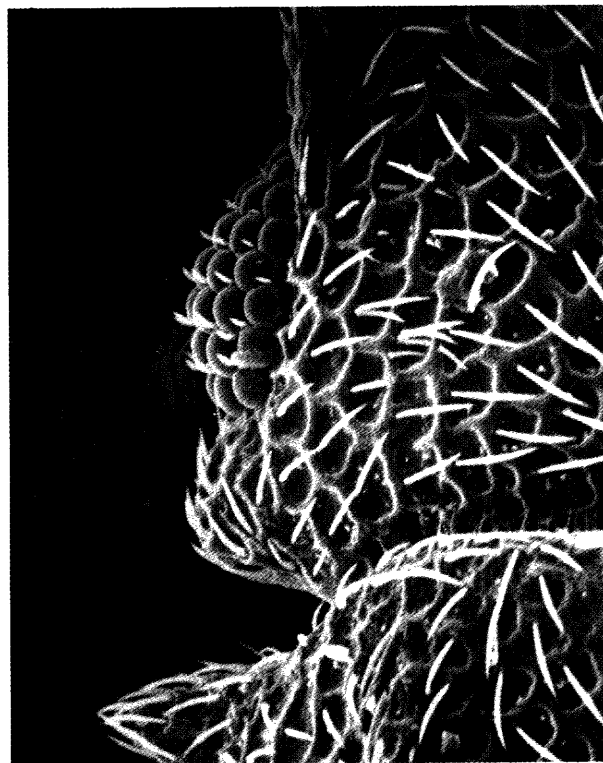


Fig. 6. *Oryzaephilus surinamensis* (L.), left eye and temple.

KEY TO THE UNITED STATES SPECIES OF ORYZAEPHILUS

1. Temple at least one-half length of eye (fig. 6), not sharply angulate behind .....surinamensis (L.)
- 1'. Temple less than one-third length of eye (fig. 5), sharply angulate behind .....2
2. Anterior pronotal angle moderately developed in large males (fig. 2); body less elongate (3.6-4.1:1); pronotum of large males with lateral ridges not strongly elevated (fig. 4)... .....mercator Fauvel)
- 2'. Anterior pronotal angles strongly developed in large males (fig. 1); body more elongate (3.9-4.4:1); pronotum of large males with lateral ridges strongly produced (fig. 3) .....acuminatus Halstead

Male genitalia are also diagnostic for each species (see Halstead 1980).

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